

Notice of Allowability

Application No.

10/777,560

Examiner

Thinh T. Nguyen

Applicant(s)

LUAN ET AL.

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/11/2006.
2. ☒ The allowed claim(s) is/are 1, 3-14 and 22.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 20060926.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

1. This is in response to the applicant amendment on 9/11/2006.
2. Claims 1-24 are pending in the Application.

Examiner's Amendment.

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

As per authorization from the Applicant legal representative, makes the following amendments.

I/ cancels claim 2 and non-elected withdrawn claims 15-21,23-24.

II/ Amends claim 1,3, 4 as the following:

1. An integrated circuit comprising:
a first array of memory cells, each memory cell in the first array comprising a resistive element and a Schottky diode coupled in series and having first and second terminals, the resistive element being formed by a single layer of material, the Schottky diode being formed by two layers, the single layer for the resistive element and the two layers for the Schottky diode being stacked together;

a first plurality of bit lines, one bit line for each column of the first array, each bit line coupled to the first terminal of memory cells in a respective column of the first array; and a first plurality of word lines, one word line for each row of the first array, each word line coupled to the second terminal of memory cells in a respective row of the first array **wherein the resistive element for each memory cell is formed by a perovskite material.**

3. The integrated circuit of claim 1, wherein the perovskite material is $\text{Pr}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$.
4. The integrated circuit of claim 1, wherein the perovskite material is a colossal magnetoresistive (CMR) material.

III/ inserts a legend "PRIOR ART" under fig 1,fig 2A,fig 2B,fig 3A,and fig 3B.

Reason for allowance

4. Claims 1,3-14, 22 are allowed.

The following is an examiner's statement of reason for allowance:

Group I: Claims 1,3-11,22.

None of the references of record teaches or suggests the claimed -- INTEGRATED CIRCUIT -- having the limitations:

-- “ a first array of memory cells, each memory cell in the first array comprising a resistive element and a Schottky diode coupled in series and having first and second terminals, the resistive element being formed by a single layer of material, the Schottky diode being formed by two layers, the single layer for the resistive element and the two layers for the Schottky diode being stacked together; “--
and
-- “ the resistive element for each memory cell is formed by a perovskite material. “--

in combination with all other limitations as recited in claim 1.

Group II: Claims 12-14.

None of the references of record teaches or suggests the claimed – MEMORY DEVICE -- having the limitations:

--“an array of memory cells, each memory cell comprising a resistive element and a Schottky diode coupled in series and having first and second terminals, the resistive element being formed by a single layer of material, the Schottky diode being formed by two layers, the single layer for the resistive element and the two layers for the Schottky diode being stacked together; “—
and
-- “ a bit line driver operative to drive the plurality of bit lines for reading and programming the memory cells; a word line decoder operative to drive the plurality of word lines for reading and programming the memory cells; and

a plurality of sense amplifiers coupled to the plurality of bit lines, each sense amplifier operative to sense a current on a respective bit line to determine a resistance state of a resistive element for a memory cell selected for reading. "--

in combination with all other limitations as recited in claim 12.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790. The examiner can normally be reached on Monday-Friday 9:30am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached at 571-272-1907.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

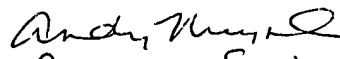
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Thinh T Nguyen



Art unit 2818


Primary Examiner